Chemistry 164 - Spring 2024 - Honors General Chemistry II

COURSE INFORMATION

Course website: via Canvas at https://canvas.rutgers.edu

Lecture Instructor:

Dr. Kate Waldie, kate.waldie@rutgers.edu
Office: Busch Campus, CCB 3220
Office hours: Friday 3:00-5:00pm via Zoom, and by appointment

Recitation Instructor:

Dr. Marc Muñiz, mnm111@chem.rutgers.edu
Office: Busch Campus, WR A206
Office hours: TBD

Dr. Yeung-gyo Shin, ygshin@chem.rutgers.edu
Office: Busch Campus, WR A101
Office hours: TBD

Lectures:

Monday & Thursday 10:20-11:40am
Location: College Ave, AB 1170

Recitations:

Section H1, Thursday 12:25-1:20pm
Location: Busch Campus, SEC 202

Section H2, Thursday 2:15-3:10pm
Location: Busch Campus, SEC 207

COURSE REQUIREMENTS

Pre-Requisite:

01:160:163 Honors General Chemistry I, or permission from the instructor

Pre- or Co-Requisites:

01:640:136 Calculus II for the Life and Social Sciences

or 01:640:152 Calculus II for the Mathematical and Physical Sciences

or permission from the instructor

Required Materials:

Chemistry: Structure and Properties, 2nd Edition. Nivaldo J. Tro, ISBN-13: 978-0-13-429393-6

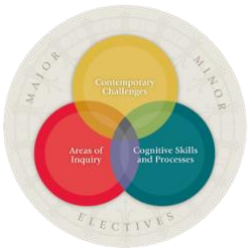
Scientific Calculator. Calculators with memory are not permitted

Laptop, smart phone, or other mobile device

LEARNING GOALS

This one-semester course serves as a continuation of Honors General Chemistry I. This course is intended to educate students going on to take higher-level chemistry courses such as organic or physical chemistry, or to major in chemistry or a related field in science, engineering, pharmacy, or medicine. In addition to the specific topics listed in the schedule below, the goals of this course include (1) for students to develop a deep understanding of chemistry concepts to apply them to practical problems, and (2) for students to advance their capacities for scientific argumentation.

SAS Core Curriculum Learning Goals Met by this Course (Natural Sciences, NS):



- Understand and apply basic principles and concepts in the physical or biological sciences;
- Explain and be able to assess the relationship among assumptions, methods, evidence, arguments, and theory in scientific analysis.

Department Learning Goals Met by this Course:

- Apply relevant scientific models and qualitative & quantitative reasoning;
- Understand representations at the macroscopic, submicroscopic, and symbolic levels, including mathematical formulae;
- Understand, at an honors level, the specific topics listed in the schedule below.

COURSE FORMAT

This course will consist of two lectures on Monday and Thursday mornings, and two recitation sections on Thursdays (Sections H1 and H2). The recitation sections will include various group active learning activities. No attendance will be taken during the lecture periods, but attendance will be recorded in the recitation.

- Lectures: Lecture sessions on Mondays and Thursday will be a mix of traditional directed lectures, problem solving examples, and independent or small group activities. Lecture slides will be posted on Canvas prior to the class time.
- Recitations: Recitation sessions on Thursdays will emphasize the development of problem-solving skills related to course content that has been recently discussed in the lecture. Recitation activities will involve small group work designed to allow students time to collaboratively build their understanding of core chemical principles and problem-solving strategies and to allow students to refine their skills in scientific argumentation.
- Video Assignments: On most weeks, there will be one or more video assignments. These assignments will be short (< 30 minutes) and require students to watch a mini-lecture(s) on key course topics or a problem-solving video(s) and answer questions associated with the content via PlayPosit (embedded within Canvas). Students are expected to complete each video assignment by the posted due date – this will count toward their participation grade. These videos will be available for students to re-watch for the duration of the semester.

- eLearning Homework: Adaptive, mastery-based homework will be assigned online throughout the course via the eLearning webpage according to the schedule below. The eLearning homework platform uses dynamic problems to assess specific learning objectives in the course. Homework will be due by 11:59pm on Fridays, according to the schedule below.
- Quizzes: There will be 10 quizzes throughout the course, given at the start of Monday lectures according to the schedule below. Each quiz will generally consist of three short questions. There will be no make-up quizzes for unexcused absences.
- Midterm Exams: There will be two midterm exams held in-class during lecture, each 75 minutes duration. The midterm exams will consist of a series of multi-part, free-response questions. There will be no multiple-choice questions. Midterm exam dates are provided in the schedule below. Students are responsible for making it to the exams prepared and on-time - there will be no make-up exams. The lecture period before each midterm exam will be set aside for additional review of the relevant material.
- Final Exam: There will be one cumulative final exam held in-person, with a 3-hour duration. The final exam will consist of a series of multi-part, free-response questions. There will be no multiple-choice questions. The final exam will be scheduled by the university and the date & time will be posted here once available. Students must be available to take the final exam during the scheduled period – the final exam date & time ae immovable! Travel, family events, weddings, etc. are not valid excuses for missing an exam. Students are responsible for making it to the exams prepared and on-time - there will be no make-up final exam.
- Announcements: Course-related announcement and reminders will be made frequently on Canvas. Each student is responsible for checking announcement every day and taking advantage of reminders to promptly meet deadlines.
- Uploading Work: In many cases, students will need to upload completed activities as PDF files to Canvas during and/or outside of class sessions. A convenient way of scanning files is to use the free Genius Scan App (or similar app) that converts images taken with a mobile device camera (phone, tablet, laptop) to PDF format, which can be uploaded to Canvas.

GRADING

The grading for this course will be based on your participation in the course and your performance on problem sets, recitation activities, quizzes, two midterm exams, and final exam, as follows:

Grading Breakdown

eLearning Homework	15 %
Recitation Activities	5 %
Participation	5 %

Quizzes	15 %
Midterm #1	15 %
Midterm #2	15 %
Final Exam	30 %

There are no grade curves in this course, and thus students are not in competition with each other for grades. Letter grades will be assigned based on your final percentage score in the course:

Grading Scale

A	90-100 %
B+	85-89 %
B	80-84 %
C+	75-79 %
C	65-74 %
D	55-64 %
F	below 55 %

The above grading scheme is final and non-negotiable. There is no extra credit given in this course. Any questions or concerns about a graded assignment or assessment must be brought to the attention of the instructor within one week of receiving the grade. This encourages students to promptly review their graded work. Requests for re-grading will not be considered after this one-week window.

ATTENDANCE

Attendance in all course sessions is expected. It is highly unlikely that you will be able to succeed on exams without regular course attendance in the lectures and recitation sessions. If a student is absent for a class or one of the exams, they must fill out a self-reported absence form within 48 hours of the beginning of the missed session (http://sims.rutgers.edu/ssra). These forms will be reviewed and designated as either "excused" or "un-excused" in accordance with Rutgers policies. Submission of the self-reported absence form within this time is required to be possibly considered an "excused" absence, but this does not guarantee the absence is excused. In select cases, missed graded work may be made up in accordance with the course and university policies where such policies exist. Under unusual or extenuating circumstances, the instructors might make special arrangements on a case-by-case basis.

ACADEMIC INTEGRITY

Rutgers University takes academic dishonesty very seriously. Students must adhere to the university policies on academic integrity and student conduct for all assignments, assessments, exams, and other matters regarding this course. By enrolling in this course, you assume responsibility for familiarizing yourself with the Academic Integrity Policy and the possible penalties (including suspension and expulsion) for violating the policy. These policies can be found online. As per the policy, all suspected violations will be reported to the Office of Student Conduct. Academic dishonesty includes (but is not limited to):

- Cheating
- Plagiarism
- Aiding others in committing a violation or allowing others to use your work
- Failure to cite sources correctly
- Fabrication
- Using another person's ideas or words without attribution–re-using a previous assignment
- Unauthorized collaboration
- Sabotaging another student's work

If in doubt, please consult with Prof. Waldie.

STUDENT-WELLNESS SERVICES

Student Success Essentials: https://success.rutgers.edu

Student Support Services: www.rutgers.edu/academics/student-support

The Learning Centers: https://rlc.rutgers.edu/

Rutgers Libraries: www.libraries.rutgers.edu/

Bias Incident Reporting: https://studentaffairs.rutgers.edu/bias-incident-reporting

Dean of Students – Student Support Office: https://success.rutgers.edu/resource/dean-students-student-support-office

Office of Veteran and Military Programs and Services: https://veterans.rutgers.edu

Student Health Services: http://health.rutgers.edu/

Counseling, Alcohol and Other Drug Assistance Program & Psychiatric Services (CAPS): http://health.rutgers.edu/medical-counseling-services/counseling/

UWill: free immediate access to teletherapy; you can choose a therapist based on your preferences including issue, gender, language, ethnicity. http://health.rutgers.edu/uwill/

Office for Violence Prevention and Victim Assistance: www.vpva.rutgers.edu/

Office of Disability Services: https://ods.rutgers.edu/

Basic Needs Assistance (food, housing, and other essentials): https://ruoffcampus.rutgers.edu/basic-needs

Rutgers Student Food Pantry: https://ruoffcampus.rutgers.edu/food-pantry

COURSE SCHEDULE (*Subject to change*)

Lecture	Date	Topics	Book Sections	Suggested Problems	Quizzes	eLearning Homework
1	Th 01/18	Intro	E.1-8 11.3-5			
2	M 01/22	Solutions	13.1-5	13.25, 29, 31, 33, 37, 39, 45, 47, 53, 59, 99, 101	Quiz #1	HW #1 Due 01/26
3	Th 01/25		13.6-7	13.69, 71, 73, 77, 81, 85, 89, 105, 113, 121, 125		
4	M 01/29	Chemical Kinetics	14.1-4	14.27, 31, 33, 35, 37, 41, 43, 45	Quiz #2	HW #2 Due 02/02
5	Th 02/01		14.5-6	14.47, 49, 51, 57, 59, 65, 71		
6	M 02/05		14.7-8	14.75, 77, 81, 87, 95, 105, 117	Quiz #3	HW #3 Due 02/09
7	Th 02/08	Chemical Equilibrium	15.1-7	15.21, 25, 27, 29, 31, 33, 35, 37, 41, 43, 47, 49		
8	M 02/12		15.7-9	15.51, 53, 57, 59, 61, 63, 65, 67, 71, 73, 83, 89, 91, 95	Quiz #4	HW #4 Due 02/16
-	Th 02/15	Midterm Review				
-	**M 02/19**	**Midterm #1**				No HW
9	Th 02/22	Acids & Bases	16.1-5	16.31, 33, 35, 37, 39, 41, 45, 47, 145		
10	M 02/26		16.6-8	16.49, 51, 53, 55, 59, 65, 75, 81, 83, 87, 89, 93		HW #5 Due 03/01
11	Th 02/29		16.9-11	16.97, 99, 103, 107, 109, 113, 117, 121, 123		
12	M 03/04	Aqueous Equilibrium – Buffers and Titrations	17.1-3	17.25, 27, 29, 33, 37, 43, 47, 51, 53, 113, 131, 135	Quiz #5	HW #6 Due 03/08
13	Th 03/07		17.4	17.59, 63, 65, 69, 71, 73, 75, 121		
-	M 03/11	Spring Break - No Class				
-	Th 03/14	Spring Break - No Class				

14	M 03/18	Aqueous Equilibrium – K_{sp} and K_f	17.5-6	17.83, 85, 87, 93, 95, 97, 99, 101, 103, 105, 125, 127, 137	Quiz #6	HW #7 Due 03/22
15	Th 03/21		17.7	17.107, 109, 145		
16	M 03/25	Free Energy & Thermo-dynamics	18.1-8	18.27, 31, 33, 35, 37, 39, 41, 45, 51, 53, 59, 61, 83	Quiz #7	HW #8 Due 03/29
17	Th 03/28		18.8-10	18.67, 69, 71, 75, 87, 91, 93, 97, 103, 107		
-	M 04/01	Midterm Review			Quiz #8	No HW
-	**Th 04/04**	**Midterm #2**				
18	M 04/08	Electrochemistry	19.1-4	19.33, 37, 39, 43, 47, 49, 53, 57, 59		HW #9 Due 04/12
19	Th 04/11		19.5-9	19.61, 65, 69, 71, 75, 83, 85, 91, 99, 115, 119, 127		
20	M 04/15	Radioactivity	20.1-12	20.31, 35, 37, 45, 51, 55, 59, 65, 73, 77, 83, 91, 99	Quiz #9	HW #10 Due 04/19
21	Th 04/18	Organic Compounds	21.1-5	21.33, 37, 41, 43, 51, 53, 55		
22	M 04/22		21.7-12	21.61, 65, 67, 71, 75, 79, 83, 89, 91, 99	Quiz #10	No HW
23	Th 04/25	Inorganic Compounds	22.1-6	22.17, 19, 21, 25, 33, 37, 41, 45, 47, 51, 53, 59, 65, 69, 71, 73		
-	M 04/29	Final Review				
	F 05/03	**Final Exam Friday May 3rd, 8:00-11:00am**				